Remarks

I. Status of claims

Claims 1-24 were pending.

Withdrawn claims 1-12 have been canceled without prejudice.

II. Claim rejections

The Examiner has rejected claims 13-24 under 35 U.S.C § 102(b) over Oh (US 5,616,078).

A. Claim 13

Independent claim 13 recites:

> 13. A device for controlling a video game, comprising:
>
> a movable input;
>
> an imager attached to the input and operable to capture images of a scene in the vicinity of the input; and
>
> a movement detector operable to compute three-dimensional position coordinates for the input based at least in part on one or more comparisons between images of the scene captured by the imager and to generate output signals for controlling the video game based on the computed position coordinates.

In support of the rejection of claim 13, the Examiner has stated that:

> Oh discloses a device for controlling a video game comprising a movable input (col. 2: 12-28), an imager attached to the input and operable to capture images of a scene in the vicinity of the input (col. 2: 40-56), a movement detector operable to compute three-dimensional position for the input based in part on one or more comparisons between images of the scene captured by the imager and to generate output signals for controlling the video game based on the computed position coordinates (col. 2-3 59-4).

In col. 2, lines 12-28, Oh discloses that (emphasis added):

> It is another object of the present invention to provide a motion-controlled video entertainment system in which the

> motion of game characters displayed on a display device is controlled in accordance with the motion of a player's entire body, thereby greater realism in the fight-type game can be realized, bring to the player a more realistic sensation.
>
> The present invention is directed to a motion-controlled video entertainment system comprising: a marker to be attached at a specified position of a player; a detector operable to detect a position of the marker; a calculator operable to calculate posture parameters of the player based on the detected position of the marker; a game processor operable to generate a game image in accordance with a predetermined game program and the calculated posture parameters of the player; and a display device operable to display a generated game image.

In col. 2, lines 40-56, Oh discloses that (emphasis added):

> A feature of the present invention includes a camera for photographing the player in different posture parameters; an object image producer for producing a plurality of object images respectively representing different posture parameters of the particular game character based on photographed images of the player in different posture parameters, and the game processor having a memory for storing the plurality of object images of the particular game character; and a designator for designating an object image corresponding to the calculated posture parameters of the player.
>
> An embodiment of the detector includes a reference sheet over which the player acts; and a camera for photographing the player on the reference sheet, wherein a field of view of the camera is held in a fixed positional relation to the reference sheet to calculate posture parameters of the player based on a relative position between a photograph image of the reference sheet and a photograph of the mark.

In col. 2, line 59 - col. 3, line 4, Oh discloses that (emphasis added):

> Further, the present invention is directed to a motion-controlled video entertainment system comprising: a marker to be attached at a specified position of each of a plurality of players; a plurality of detectors for detecting positions of the markers of the plurality of players respectively; a calculator for calculating posture parameters of the plurality of players based on the detected positions of the marks respectively; a game processor for generating a plurality of game images for the plurality of players in accordance with a predetermined game program and the respective calculated posture parameters of the plurality of

players; and a plurality of display devices for displaying generated game images respectively.

It appears from the Examiner's statement that the "marker", which is "attached at a specified position of a player," constitutes the "movable input" recited in claim 13, and the "camera for photographing the player in different posture parameters" constitutes the "imager" recited in claim 13. In accordance with Oh's teachings, however, the camera is not attached to the marker. Instead, the camera is attached at a fixed location within a game compartment 2 (see, e.g.: FIG. 1; col. 4, lines 1-15; and col. 4, lines 42-44: "The video cameras 31 and 31' are disposed at positions suitable to overlook the player Q obliquely from front and above."). Indeed, Oh's motion-controlled video entertainment system 1 would not work for its intended purpose if the video cameras 31, 31' were attached to the markers. In particular, the video cameras 31, 31' would not be able to capture images of the markers and, consequently, the image processor 33 would not be able to extract "the sets of markers M from the image picked up by the video cameras 31 and 31' and ... [detect] the coordinates that indicate the positions of the respective sets of markers M" (col. 4, lines 25-28).

For at least these reasons, the Examiner's rejection of claim 13 under 35 U.S.C. § 102(b) over Oh should be withdrawn.

B. Claims 14-24

Each of claims 14-24 incorporates the elements of independent claim 13 and therefore is patentable over Oh for at least the same reasons explained above.

Claims 14, 17-21, and 23 also are patentable over Oh for the following additional reasons.

1. Claim 14

Claim 14 recites that "the movement detector is operable to compute rotational position of the movable input based at least in part on one or more comparisons between images of the scene captured by the imager."

In support of the rejection of claim 14, the Examiner has stated that "Oh discloses the movement detector operable to compute rotational position of the movable input based on one or more comparisons between images of the scene captured by the imager (col. 5: 11-23)." In col. 5, lines 11-23, however, Oh merely discloses that the image processor 33

"calculates the coordinates of the center of weight of the markers M from the extracted data of image at every time of sample." The coordinates of the center of weight of the markers correspond to the three-dimensional coordinates of the markers; these coordinates do not provide any information whatsoever about the rotational positions of the markers. Indeed, by treating each marker as a point (i.e., the center of weight location), the image processor 33 cannot possibly determine the rotational position of the marker.

2. Claim 17

Claim 17 recites "further comprising an acceleration sensor unit attached to the input and operable to generate signals indicative of movement of the input in three-dimensions, wherein the movement detector is operable to detect movement of the input based at least in part on the signals generated by the acceleration sensor."

In support of the rejection of claim 14, the Examiner has stated that "Oh discloses a sensor unit, which is attached to the input and operable to generate signals indicative of movement of the input in three-dimensions (col. 5: 11-43,6-7: 66-7 and 9: 4-14)." The only "sensor unit" disclosed in Oh, however, is a video camera. Oh does not disclose anything about an acceleration sensor. Indeed, an acceleration sensor would not serve any apparent useful purpose in the context of Oh's motion-controlled video entertainment system, which is designed to determine three-dimensional coordinates of passive markers based on video images of the markers in relation to a reference sheet 32 (see col. 4, lines 19-28).

3. Claim 18

Claim 18 depends from claim 17 and therefore is patentable over Oh for at least the same reasons explained above. Claim 18 also is patentable over Oh for the following additional reasons.

Claim 18 recites that "the movement detector is operable to compute coarse three-dimensional position coordinates for the input based on the signals received from the acceleration sensor unit and to compute refined three-dimensional position coordinates for the input based on the computed coarse three-dimensional position coordinates and comparisons between images of the scene captured by the imager."

Oh does not disclose anything whatsoever about computing coarse three-dimensional position coordinates for the input and computing refined three-dimensional position

coordinates for the input. Instead, the image processor 33 computes the three-dimensional coordinates of the markers directly from the two-dimensional coordinates extracted from the images (see col. 5, lines 10-24).

4. Claim 19

Claim 19 depends from claim 17 and therefore is patentable over Oh for at least the same reasons explained above. Claim 19 also is patentable over Oh for the following additional reasons.

Claim 19 recites that "the movement detector is operable to periodically correct three-dimensional position coordinates for the input computed from signals generated by the acceleration sensor based on position coordinates computed from comparisons between images of the scene captured by the imager."

Oh does not disclose anything whatsoever about periodically correcting three-dimensional position coordinates for the input. Instead, the image processor 33 computes the three-dimensional coordinates of the markers directly from the two-dimensional coordinates extracted from the images (see col. 5, lines 10-24).

5. Claim 20

Claim 20 depends from claim 17 and therefore is patentable over Oh for at least the same reasons explained above. Claim 20 also is patentable over Oh for the following additional reasons.

Claim 20 recites that "the movement detector is operable to compute acceleration information relative to position information computed from comparisons between images of the scene captured by the imager."

In support of the rejection of claim 20, the Examiner has stated that "Oh discloses of a movement detector, which is operable to computer information relative to position information computed from comparison between images of the scene captured by the imager (figure 9, col. 5: 11-43, col. 6: 44-50, 7: 34-50 and 9: 4-14)." Contrary to the implications of the Examiner's statement, however, Oh does not disclose anything about computing "acceleration information relative to position information computed from comparisons between images of the scene captured by the imager," as recited in claim 20.

6. Claim 21

Claim 21 depends from claim 17 and therefore is patentable over Oh for at least the same reasons explained above. Claim 21 also is patentable over Oh for the following additional reasons.

Claim 21 recites that "the movement detector is operable to compute a measure of movement rate of the movable input based on the signals received from the acceleration sensor unit, and the imager captures images of the scene at a variable rate that is set based on the computed movement rate measure."

In support of the rejection of claim 21, the Examiner has stated that "Oh discloses of a movement detector, which is operable to computer information relative to position information computed from comparison between images of the scene captured by the imager (figure 9, col. 5: 11-43, col. 6: 44-50, 7: 34-50 and 9: 4-14)." Contrary to the implications of the Examiner's statement, however, Oh does not disclose anything whatsoever about computing "a measure of movement rate of the movable input based on the signals received from the acceleration sensor unit, and the imager captures images of the scene at a variable rate that is set based on the computed movement rate measure," as recited in claim 21.

7. Claim 23

Claim 23 recites that "the movement detector is operable to compute position coordinates for the reference surface by correlating features of the reference surface across multiple images."

In support of the rejection of claim 21, the Examiner has stated that "Oh discloses of a movement detector, which is operable to computer information relative to position information computed from comparison between images of the scene captured by the imager (figure 9, col. 5: 11-43, col. 6: 44-50, 7: 34-50 and 9: 4-14)." Contrary to the implications of the Examiner's statement, however, Oh does not disclose anything whatsoever about "correlating features of the reference surface across multiple images," as recited in claim 23.

III. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

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